

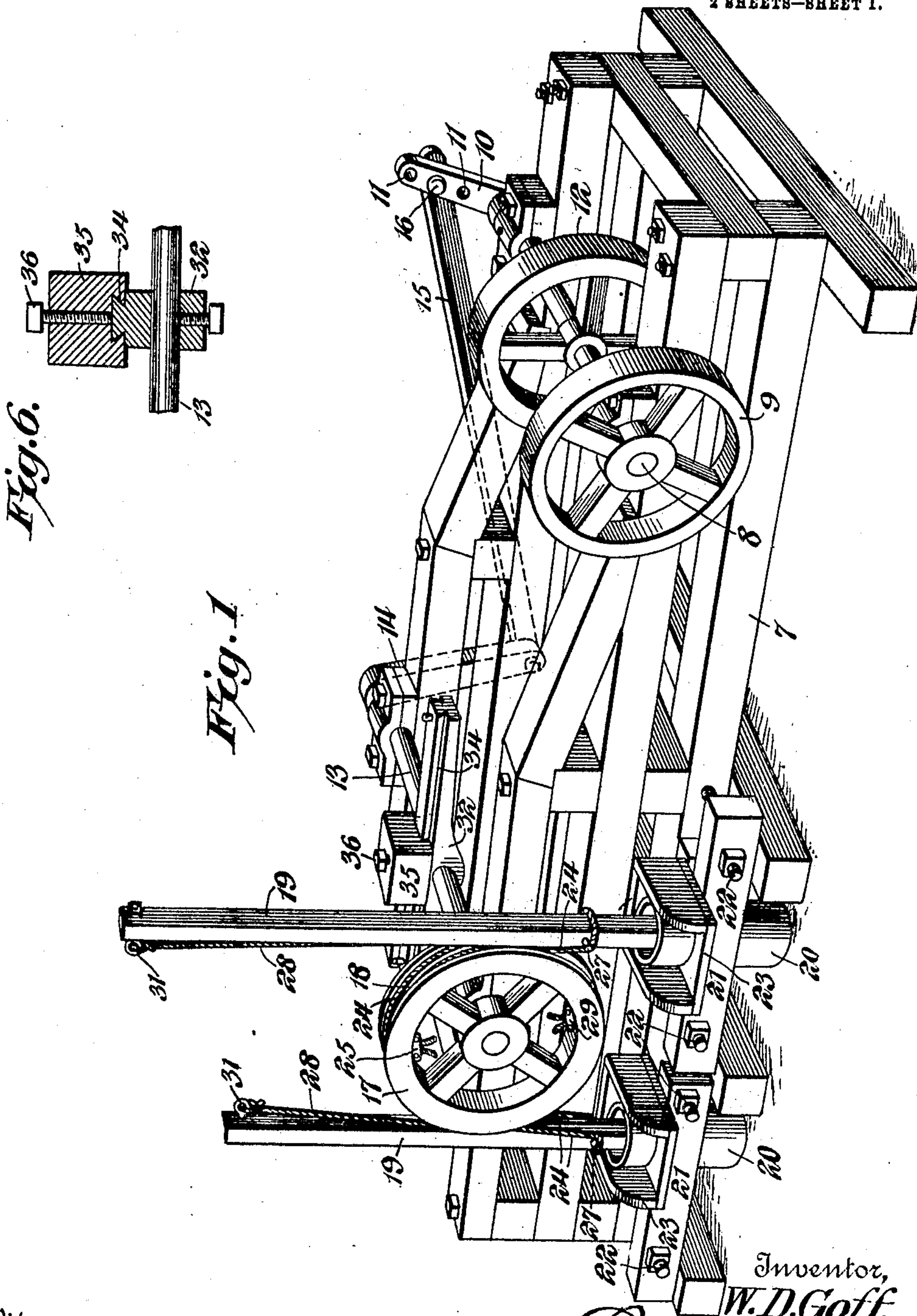
No. 837,398.

PATENTED DEC. 4, 1906.

W. D. GOFF.
POWER TRANSMITTING MEANS.

APPLICATION FILED APR. 13, 1906.

2 SHEETS—SHEET 1.



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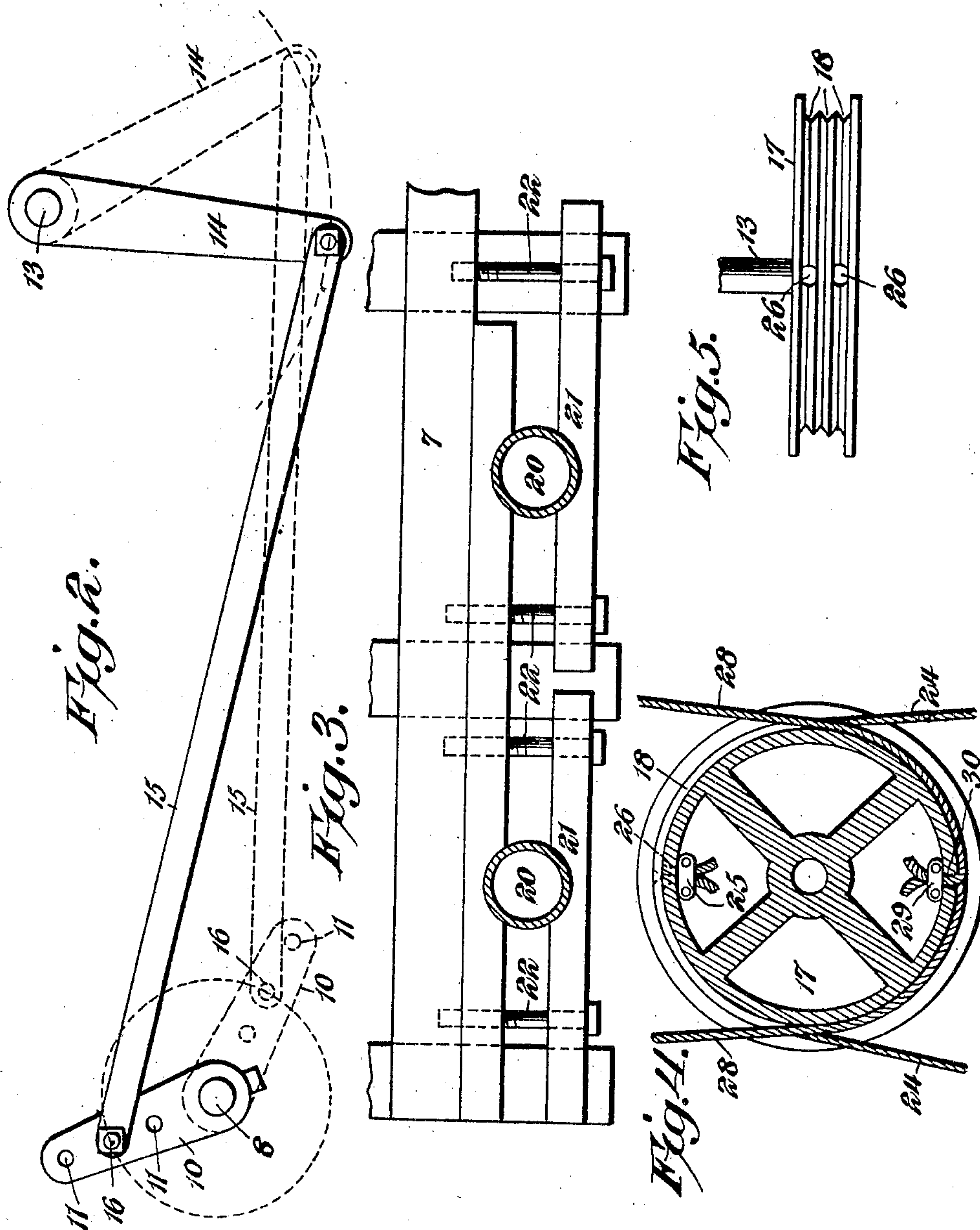
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UNITED STATES PATENT OFFICE.

WILLIAM D. GOFF, OF JOPLIN, MISSOURI.

POWER-TRANSMITTING MEANS.

No. 837,398.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed April 13, 1906. Serial No. 311,533.

To all whom it may concern:

Be it known that I, WILLIAM D. GOFF, a citizen of the United States, residing at Joplin, in the county of Jasper and State of Missouri, have invented a new and useful Power-Transmitting Means, of which the following is a specification.

This invention in one aspect relates to means for converting rotary into reciprocatory motion, and while particularly useful as pump-operating mechanism is undoubtedly capable of successful employment for other purposes.

One of the principal objects is to provide novel means of a simple nature whereby rotary driving power is converted into reciprocating motion for operating a plurality of reciprocatory members—as, for instance, pump-plungers—the said members being so arranged that they practically balance each other, and thereby eliminate to a great extent the shock due to the change of direction of movement.

A further object is to provide mechanism wherein either reciprocatory member can be disconnected from the driving means and to provide means that can be arranged to act as a counterbalance in place of the member so disconnected, the counterbalancing means being also disposed so that it may be made to act in case the members do not of themselves counterbalance.

The preferred embodiment of the invention is illustrated in the accompanying drawings and is in the form of pump-operating means.

In the drawings, Figure 1 is a perspective view of the mechanism. Fig. 2 is a side elevation of the crank connections between the driving and driven elements and illustrating their action. Fig. 3 is a plan view showing the clamping means for the well-casings. Fig. 4 is a vertical sectional view through the rock-wheel. Fig. 5 is a top plan view of the same. Fig. 6 is a cross-sectional view through the counterweight and its support.

Similar reference-numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated a suitable frame 7 is employed, comprising longitudinal and cross beams bolted or otherwise secured together. On one end of the frame is journaled a driving-shaft 8, that is disposed transversely of the frame and carries at one end a driving-pulley 9 and at the other end a crank-

arm 10, provided with a series of openings 11. A fly-wheel 12 is preferably mounted on the drive-shaft between the longitudinal beams of the frame. A rock-shaft 13 is journaled transversely on the other end of the frame and carries at one end a crank-arm 14, said crank-arm being longer than the crank-arm 10. A pitman 15 is connected to the free end of the arm 14 and has an adjustable connection 16 with the crank-arm 10. The connection 16 is arranged to be placed in any of the openings 11, so that the end of the pitman secured thereby can be placed at different distances from the axis of rotation of the crank-arm and of the drive-shaft 8. By this arrangement it will be clear that if the drive-shaft 8 is rotated from any suitable source of power the rotating crank 10 will cause a back-and-forth swinging movement of the pitman 15. The crank 14 being longer than the crank 10 will consequently swing back and forth, and thus the shaft 13 will be rocked.

Secured to the opposite end of the rock-shaft 13 to that carrying the crank-arm 14 is a rock-wheel 17, disposed at one side of the frame and having a series of peripheral grooves 18. (Shown more particularly in Fig. 5.) On opposite sides of this wheel are located oppositely-moving reciprocatory members 19, which in the present embodiment are pump plunger-rods and are vertically disposed, though, as already stated, they may be devices employed for other purposes. The members 19 are shown as extending into well-casings 20, clamped by bars 21 and bolts 22 to one side of the frame. The upper ends of the casings are surrounded by suitable discharge-spouts 23. Doubled cables 24 have their ends adjustably and detachably clamped, as shown at 25, to the upper portion of the wheel 17, said cables passing through openings 26 in the upper portion of the pulley and extending downwardly in the outer peripheral grooves 18. The lower portions of these cables extend on opposite sides of the reciprocatory members 19 and pass about cross-pins 27, that extend through the members 19 and project on opposite sides of the same. Upwardly-extending single cables 28 are adjustably and detachably clamped, as shown at 29, to the lower portion of the wheel and, passing through an opening 30 therein, extend upwardly in the central groove. The upper ends of the cables 28 are detachably fastened, as shown at 31, to eyes that are carried by the upper ends of

the reciprocatory members. It will be observed that by this arrangement the reciprocatory members move in opposite directions upon the movement of the rock-shaft, being elevated by the doubled or looped cables and being moved downwardly by the single cables 28. Moreover, it will be apparent that either member may be disconnected from the wheel.

10 In order to counterbalance either member when operating singly, the following mechanism is preferably employed: A walking-beam 32 is suitably secured to an intermediate portion of the rock-shaft 13 and has oppositely-extending arms. A longitudinal guideway or track 34, dovetailed in cross-section, is formed upon the upper portion of this walking-beam, and slidably mounted on the track is a counterbalancing device in the form of a weight 35, that is thus movable to positions on opposite sides of the axis of movement of the shaft 13. A suitable set-screw 36, carried by the counterweight, serves to hold it in any desired position.

25 From the above it will be apparent that if the drive-shaft is rotated the rock-shaft will be moved, and because of the connection between the wheel and the reciprocatory members said members will be alternately moved in opposite directions. If these members properly counterbalance, the weight 35 is of course placed directly over the rock-shaft 13; but if one should be heavier than the other the weight may then be moved in order to assist the lighter in counterbalancing the heavier. If for any reason one of the beams or reciprocatory members is inoperative and it is desired to use the other alone, the beam or member is disconnected by detaching the cables and the weight 35 is arranged on the proper arm of the walking-beam, so that it will counteract or counterbalance the weight of the operating member.

45 From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

55 Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In mechanism of the character described, the combination with a rock member, of a reciprocatory member connected therewith and having a cross-pin projecting from its opposite sides, and a doubled cable secured to the rock member and having a looped portion extending on opposite sides of the reciprocatory member and engaged with the projecting portions of the pin.

2. In mechanism of the character described, the combination with a rock-shaft, of a wheel mounted thereon, an upright reciprocatory member, a downwardly-extending doubled cable having spaced portions secured to the wheel and having its doubled portion engaging and connected to opposite sides of the reciprocatory member, and an upwardly-extending cable secured to the upper end of the reciprocatory member and connected at its lower portion to the wheel.

3. In mechanism of the character described, the combination with a rock-shaft, of a wheel secured thereto, and having peripheral grooves, upright reciprocatory members located on opposite sides of the wheel, cross-pins extending through the members and projecting beyond the opposite sides thereof, cables secured to the upper portion of the wheel and located in the outer grooves, said cables having their lower portions extending on opposite sides of the reciprocatory members and looped about the projecting ends of the cross-pins, upwardly-extending cables secured to the lower portion of the wheel and arranged in the intermediate groove, said upwardly-extending cables being secured to the upper ends of the reciprocatory members, and means for operating the rock-shaft.

4. In mechanism of the character described, the combination with oppositely-movable members, of rotary driving means connected thereto for simultaneously moving said members in opposite directions, a counterbalance, and means for disposing the counterbalance in opposing relation to either member, to counterbalance its resistance on the driving member.

5. In mechanism of the character described, the combination with oppositely-moving members, of driving means connected to the members for moving the same in opposite directions, detachable connections between the operating means and members to permit the detachment of either independently of the other, a counterbalance, and means for connecting the counterbalance to the driving means in opposing relation to either member when the other is detached.

6. In mechanism of the character described, the combination with oppositely-moving members, of rotary driving means having connections therewith for simultaneously moving the members in opposite directions, oppositely-swinging arms operated by the driving means, and a counterbalance that can be placed on either arm.

7. In mechanism of the character described, the combination with oppositely-moving members, of operating means therefor, separate connections detachably securing the members to the operating means and permitting the detachment of either member independently of the other a walking-beam

connected to the operating means and having oppositely-swinging arms moving with the members, and a counterbalance-weight longitudinally slidable on the beam to positions on opposite sides of its axis of movement.

8. In mechanism of the character described, the combination with a rock-shaft, of oppositely-moving members connected thereto, oppositely-extending arms secured to the rock-shaft independently of the members, and counterbalancing means that is movable to positions on either arm.

9. In mechanism of the character described, the combination with a rock-shaft, of oppositely-moving members connected thereto, a walking-beam mounted on the rock-shaft, a counterbalancing device longitudinally slidable on the walking-beam to positions on opposite sides of the shaft, and means for securing the counterbalancing device against longitudinal movement.

10. In mechanism of the character described, the combination with a rock-shaft, of a wheel carried thereby, oppositely-moving reciprocatory members, detachable cable connections between the members, and the wheel, a walking-beam secured to the rock-shaft and having a longitudinal track, a weight slidably mounted on the track and movable to positions on opposite sides of the rock-shaft, and means for securing the weight in different positions upon the walking-beam.

11. In mechanism of the character described, the combination with a rock-shaft, of a wheel and a walking-beam mounted thereon, reciprocatory members located on opposite sides of the wheel, means connecting the members to the wheel to effect their simultaneous movement in opposite directions on the movement of the rock-shaft, and a counterbalance mounted on the beam and movable thereon to positions on opposite sides of the rock-shaft.

12. In mechanism of the character described, the combination with a rock-shaft,

of a wheel and a walking-beam mounted thereon, a reciprocatory member located on each side of the wheel, separate detachable devices connecting the members and the wheel to effect their simultaneous movements in opposite directions on the movement of the rock-shaft, said devices permitting the detachment of either member independently of the other, a counterbalance mounted on the walking-beam and movable thereon to positions on opposite sides of the rock-shaft, and means connected to the rock-shaft for operating the same.

13. In mechanism of the character described, the combination with a supporting-frame, of a drive-shaft journaled thereon and having a crank, a rock-shaft journaled on the frame and having a crank that is longer than the crank of the drive-shaft, a pitman connected to the crank of the rock-shaft and having an adjustable connection with the crank of the drive-shaft, a walking-beam secured to the rock-shaft between its ends and having a longitudinally-disposed track, a weight slidably mounted on the track and movable to positions on opposite sides of the rock-shaft, means for holding the weight in different positions on the track, a wheel secured to the rock-shaft and having peripheral grooves, upright reciprocatory members located on opposite sides of the wheel, doubled cables arranged in certain of the grooves and secured to the upper portion of the wheel, said cables having looped lower ends engaged with the reciprocatory member, and upwardly-extending cables located in certain of the grooves, said cables being secured to the lower portion of the wheel and to the reciprocatory members above the wheel.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM D. GOFF.

Witnesses:

J. W. KING,
F. T. SNAPP.